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EXAMINER

ZERVIGON, RUDY

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 04/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/895,511

Applicant(s)

LIANG ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The corrected or substitute drawings were received on February 10, 2003. These drawings are acceptable.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casey, Jr. et al (USPat. 6,042,738). Casey teaches an apparatus (Figure 1) including:
  - i. A holder (26) adapted to mount a substrate (30)
  - ii. A stage (24) adapted to position the holder in a chamber (22)
  - iii. A pumping system ("vacuum chamber 22"; column 4, lines 31) adapted to evacuate the chamber
  - iv. An ion column (column 3, lines 8-16, "image and mill the workpiece"; column 4, lines 5-10) imaging system (54; column 4, lines 38-45; column 5, lines 5-10) adapted to locate (column 6, lines 17-30) an opaque defect (abstract; column 1, lines 5-10; column 2, lines 28-50; column 8, line 62 – column 9, line 2; ) in the substrate
  - v. A gas delivery system (34; column 5, lines 22-38) adapted to dispense a reactant gas towards the defect

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- vi. An ion column delivery system (12/14; column 4, lines 27-35, 45-63; “image and mill the workpiece”; column 4, lines 5-10) adapted to direct ions towards the opaque defect (column 3, lines 60-65)
- vii. DUV/EUV mask substrate (column 1, lines 35-45)
- viii. Chrome opaque defect (column 3, lines 3-4; line 55)
- ix. An ion focusing system (18; column 4, lines 28-44) and scanning system (62, column 4, lines 39-43)
- x. An acceleration system (“JEOL Model 6400”) providing a low acceleration voltage (column 9, lines 20-25)
- xi. A computer controller (50, column 4, lines 38-45; column 7, lines 33-44) adapted to control the ion delivery system

Casey does not teach components of an electron delivery/imaging system.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Casey’s specific example of a particle beam as an ion delivery/imaging system with Casey’s alternate and equivalent example of a particle beam as an electron delivery/imaging system (column 3, lines 8-12, 66-67).

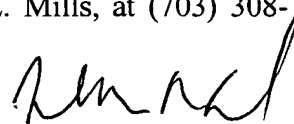
Motivation to replace Casey’s specific example of a particle beam as an ion delivery/imaging system with Casey’s alternate and equivalent example of a particle beam as an electron delivery/imaging system is to provide an alternate and equivalent means for imaging and milling a workpiece (column 4, lines 6-10; column 3, lines 8-12, 66-67).

*Response to Arguments*

4. Applicant's arguments, see paper 6, page 6, first two paragraphs, filed February 10, 2003, with respect to the rejection of claims 1-12 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of the new interpretation of the prior art reference to Casey, Jr. et al (USPat. 6,042,738) applied against claims 1-12 under 35 U.S.C. 103(a).

*Conclusion*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.



JEFFRIE R. LUND  
PRIMARY EXAMINER